

1. An apparatus for folding a nonwoven web moving on a collector in a machine direction, the nonwoven web having a first portion and a second portion adjoining the first portion, comprising:
 - a first vacuum device capable of applying a first vacuum effective
- 5 to attract the first portion and the second portion of the nonwoven web to the collector; and
 - a second vacuum device downstream in the machine direction from said first vacuum device, said second vacuum device including at least one air inlet opening positioned to underlie the collector, said vacuum device
- 10 capable of applying a second vacuum through said at least one air inlet opening to the first portion effective to attract the first portion to the collector, and said second vacuum aspirating air through the second portion effective to move the second portion relative to the first portion along a fold line extending in the machine direction and thereby establish an overlapping relationship with
- 15 the first portion.

2. The apparatus of claim 1 wherein said first vacuum device includes at least one first air inlet opening positioned to underlie the collector, said first vacuum being applied to the first portion and the second portion of the nonwoven web through said at least one first air inlet opening.

3. An apparatus for forming a nonwoven web having a first portion and a second portion adjoining the first portion, comprising:

a melt-spinning device capable of discharging a stream of filaments;

5 a collector moving in a machine direction and capable of collecting the stream of filaments discharged by said melt-spinning device to form a nonwoven web;

a first vacuum device capable of applying a first vacuum effective to attract the first portion and the second portion of the nonwoven web to said

10 10 collector; and

a second vacuum device downstream in the machine direction from said first vacuum device, said second vacuum device including at least one air inlet opening positioned to underlie said collector, said vacuum device capable of applying a second vacuum through said at least one air inlet

15 15 opening to the first portion effective to attract the first portion to said collector, and said second vacuum aspirating air through the second portion effective to move the second portion relative to the first portion along a fold line extending in the machine direction and thereby establish an overlapping relationship with the first portion.

4. The apparatus of claim 3 wherein said first vacuum device includes at least one first air inlet opening positioned to underlie the collector, said first vacuum being applied to the first portion and the second portion of the nonwoven web through said at least one first air inlet opening.

5. An apparatus for folding a nonwoven web moving on a collector in a machine direction, the nonwoven web having a first portion and a second portion adjoining the first portion, comprising:
 - a vacuum device including at least one air inlet opening
 - 5 positioned to underlie the collector, said vacuum device capable of applying a vacuum to the first portion of the nonwoven web through said at least one air inlet opening effective to attract the first portion to the collector; and
 - a positive pressure device including at least one air outlet opening positioned to underlie the collector proximate to said at least one air inlet opening, said positive pressure device capable of applying a forced air flow through said at least one air outlet opening to the second portion of the nonwoven web effective to move the second portion relative to the first portion along a fold line extending in the machine direction and thereby establish an overlapping relationship with the first portion.
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6. The apparatus of claim 5 wherein said positive pressure device further comprises:

- an air-moving device communicating with said at least one air outlet opening, said air-moving device adapted to supply a positive pressure to
- 5 said at least one air outlet opening for providing the positive pressure differential.

7. The apparatus of claim 5 wherein said vacuum device further comprises:

- an air-moving device communicating with said at least one air inlet opening, said air-moving device adapted to supply the vacuum to said at
- 5 least one air inlet opening.

8. The apparatus of claim 5 wherein said at least one outlet opening is an elongated slot with a major axis extending generally in the machine direction.

9. The apparatus of claim 5 further comprising an inclined ramp upstream from said positive pressure device, said inclined ramp contacting the second portion for moving the second portion relative to the first portion along the fold line before the positive pressure differential is applied.

10. An apparatus for forming a nonwoven web having a first portion and a second portion adjoining the first portion, comprising:

a melt-spinning device capable of discharging a stream of filaments;

5 a collector moving in a machine direction and capable of collecting the stream of filaments discharged by said melt-spinning device to form a nonwoven web;

a vacuum device including at least one air inlet opening positioned to underlie said collector, said vacuum device capable of applying a

10 vacuum to the first portion of the nonwoven web through said at least one air inlet opening effective to attract the first portion to said collector; and

a positive pressure device including at least one air outlet opening positioned to underlie said collector proximate to said at least one air inlet opening, said positive pressure device capable of applying a forced air flow

15 through said at least one air outlet opening to the second portion of the nonwoven web effective to move the second portion relative to the first portion along a fold line extending in the machine direction and thereby establish an overlapping relationship with the first portion.

11. The apparatus of claim 10 wherein said positive pressure device further comprises:

an air-moving device communicating with said at least one air outlet opening, said air-moving device adapted to supply a positive pressure to
5 said at least one air outlet opening for providing the positive pressure differential.

12. The apparatus of claim 10 wherein said vacuum device further comprises:

an air-moving device communicating with said at least one air inlet opening, said air-moving device adapted to supply the vacuum to said at
5 least one air inlet opening.

13. The apparatus of claim 10 wherein said at least one outlet opening is an elongated slot with a major axis extending generally in the machine direction.

14. The apparatus of claim 10 further comprising an inclined ramp upstream from said positive pressure device, said inclined ramp contacting the second portion for moving the second portion relative to the first portion along the fold line before the positive pressure differential is applied.

15. An apparatus for forming a nonwoven web having a first portion and a second portion adjoining the first portion, comprising:

a melt-spinning device capable of discharging a stream of filaments;

5 a collector moving in a machine direction and capable of collecting the stream of filaments discharged by said melt-spinning device to form the nonwoven web;

a transfer zone downstream in the machine direction from said melt-spinning device in which vacuum is applied through said collector to the

10 first portion and the second portion of the nonwoven web;

an initial folding zone downstream in the machine direction from said transfer zone in which vacuum is applied through said collector to the first portion; and

a folding zone downstream in the machine direction from said

15 initial folding zone in which vacuum is applied through said collector to the first portion, the positive pressure differential transferring momentum to the second portion causing the second portion to move relative to a fold line and the vacuum subsequently attracting the second portion to the first portion to establish an overlapping relationship.

16. The apparatus of claim 15 further comprising:
a forming zone beneath said melt-spinning device in which
vacuum is applied through said collector to the nonwoven web.

17. A method for folding a moving nonwoven web having a first portion adjoining an adjacent second portion, comprising:

forming the nonwoven web on a collector in a forming zone;

moving the collector in a machine direction for transporting the

5 nonwoven web away from the forming zone;

applying a first negative pressure differential to the first portion of the nonwoven web thereby attracting the first portion to the collector; and

applying a positive pressure differential to a second portion of the nonwoven web thereby causing the second portion to fold toward the first

10 portion about a fold line extending in the machine direction.

18. The method of claim 17 further comprising:
applying a second negative pressure differential to the first portion
of the nonwoven web upstream of the first negative pressure differential.

19. The method of claim 17 further comprising:
applying a second negative pressure differential to the first portion
of the nonwoven web downstream of the first negative pressure differential.

20. The method of claim 19 further comprising:
applying a third negative pressure differential to the first portion of
the nonwoven web upstream of the first negative pressure differential.

21. The method of claim 17 where applying a positive pressure
differential further comprises:
impinging the second portion with an air flow substantially
perpendicular to a plane containing the second portion.

22. The method of claim 17 where applying a positive pressure
differential further comprises:
impinging the second portion with an air flow inclined at an angle
relative to a plane containing the second portion.

23. The method of claim 17 where applying a positive pressure differential further comprises:

impinging the second portion with an air flow in the machine direction against the second portion.

24. The method of claim 17 where applying a positive pressure differential further comprises:

impinging the second portion with an air flow counter to the machine direction against the second portion.

25. The method of claim 17 where applying a positive pressure differential further comprises:

impinging the second portion with an air flow in a cross-machine direction perpendicular to the machine direction.

26. The method of claim 17 further comprising:

extending a continuous elastic member in the machine direction adjacent to the nonwoven web; and

securing the continuous elastic member in a space defined
5 between the second portion and the first portion after folding.

27. The method of claim 26 wherein the elastic member defines the longitudinal fold line about which the positive pressure differential causes the second portion to fold relative to the first portion.

28. The method of claim 17 further comprising:
contacting the second portion with an inclined ramp upstream of
the positive pressure differential for moving the second portion relative to the
first portion.

29. A method for folding a moving nonwoven web having a first portion adjoining an adjacent second portion, comprising:

forming the nonwoven web on a collector in a forming zone;

moving the collector in a machine direction for transporting the

5 nonwoven web away from the forming zone in a machine direction;

applying a first negative pressure differential to the first portion and the second portion of the nonwoven web thereby attracting the first portion and the second portion to the collector; and

applying a second negative pressure differential to the first portion

10 of the nonwoven web downstream in the machine direction from the first negative pressure differential thereby attracting the first portion to the collector and aspirating air through the second portion effective to fold toward the first portion about a fold line extending in the machine direction.

30. The method of claim 29 further comprising:
extending a continuous elastic member in the machine direction
adjacent to the nonwoven web; and

securing the continuous elastic member in a space defined
5 between the second portion and the first portion after folding.

31. The method of claim 30 wherein the elastic member defines the
longitudinal fold line about which the positive pressure differential causes the
second portion to fold relative to the first portion.